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**LARGE PERINEURAL FIBROMA INVOLVING
THE ENTIRE SCIATIC NERVE-SHEATH.¹**

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THE following unusual case of a large perineural fibroma involving the entire sciatic nerve-sheath and deep femeropopliteal fascia appeared of especial interest to me from the fact that extirpation of the tumor and popliteal vessels was performed, leaving the sciatic nerve uninjured, *in situ*, and recovery took place, with the loss of only the toes and heel-covering from sloughing.

The patient, C. B., a light mulatto, was a native of Louisiana, aged twenty two years; a steamship waiter by occupation. He was distinctly tubercular on the maternal side. His personal history was good as far as habits and previous diseases were concerned. There was no history of traumatism, nor other conditions that might suggest a cause of the present trouble. He was admitted to the Charity Hospital of New Orleans, April 1, 1898, for the relief of a large tumor of the right lower limb, which had gradually developed since the age of twelve (ten-years' duration). The patient was pale, anemic, marasmic from prolonged inactivity, indoor life, and bad hygienic surroundings. He had been losing flesh progressively, and now weighed only 120 pounds, notwithstanding his height which was six feet. The large size of the right lower limb was striking to the eye on account of its great size, markedly contrasting with the opposite member which was thin and atrophied. (See Fig. 1.) The affected limb was enlarged from the lower

¹ Preliminary report presented to the American Surgical Association, annual meeting held at Chicago, May 31, 1899.

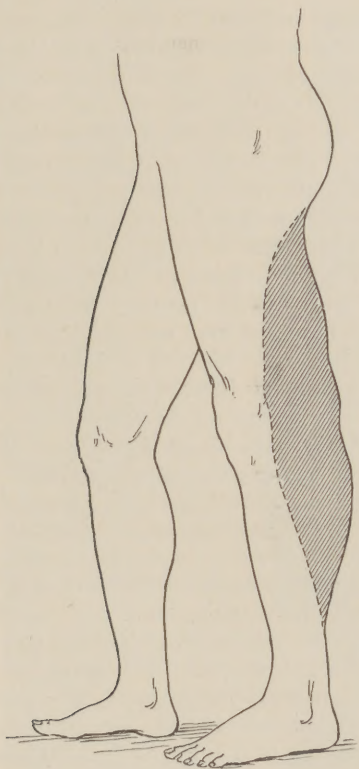
gluteal fold to the toes. The enlargement was most marked posteriorly, where it projected in prominent relief from the femoral, popliteal, and crural regions. The tumor increased progressively in size from the tuberosity of the ischium to the center of the popliteal space, where it attained its greatest dimensions, and from this point again decreased until it reached the malleoli. The leg and foot were cylindrical in outline, the normal contour of the ankle having been obliterated by edema which was evidently caused by mechanical compression of the popliteal vessels. The tumor originated primarily in the popliteal space as a slow, indolent, hard, painless swelling which in no manner interfered with the function of the limb until three years ago, when it filled the space back of the knee so completely that flexion was impossible. About the same time it was noticed that the growth had extended up the thigh and down into the calf, but it was not until one year later that edema and weakness of the leg began.

The actual length of the growth as it was felt through the skin was 42 cm. (17.5 inches), and it extended distinctly along the sciatic tract from the tuberosity of the ischium to the middle of the calf. It projected behind the popliteal space from one hamstring to the other, 21 cm. (9 inches). The circumference of the affected limb around the knee was 49 cm. (19.5 inches); of the sound limb 36 cm. (14.5 inches). The same proportional difference was observed in comparing the normal and affected limb at various points in the circumference of the thigh and leg.

The skin overlying the tumor was thin, adherent, fixed, and immovable; the underlying mass was hard and nodular, especially in the popliteal space and calf. There was no pain on pressure or spontaneously. There was some edema in the skin of the leg, and a small superficial ulcer above the ankle; no trophic lesions or disturbances

of sensibility could be detected in the foot or leg. The neoplastic area was defined externally by a line drawn

FIG. 1.

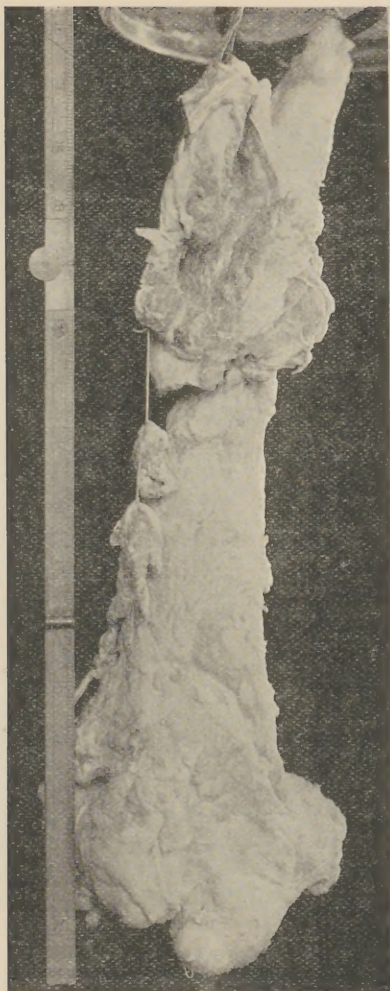


from the great trochanter to the external condyle of the femur and middle of the fibula; internally by a line from the tuberosity of the ischium to the internal condyle and middle of tibia. Scarcely any motion was obtained by

manipulation, the growth being very deeply rooted to the posterior ligament of the knee, sural and hamstring muscles, and periosteum of the femur.

A cubic fragment of tumor was removed from the popliteal space under cocain anesthesia, and the diagnosis of pure fibroma was established. On May 18, 1898, the tumor was extirpated, *en bloc* by a careful dissection which extended from the tuberosity of the ischium to the middle of the calf; the incision measured about 54 cm. (24 inches). The tumor, which was a white, dense, extremely hard, and resisting mass, had to be removed by a process of slow and tedious dissection. It was impossible to enucleate or shell it out of its surroundings; it had no capsule; it blended everywhere most intimately with surrounding tissues. When removed it measured over seventeen inches in length, and weighed a little [more than three pounds. (See Fig. 2.) It was hard, bloodless, and creaked under the knife. The origin of the tumor from the sheath of the sciatic nerve was clearly ascertained, and the greatest difficulty was experienced in separating it from the nerve. In the popliteal space the mass had so completely wrapped itself around the popliteal artery and vein that all efforts to save these vessels had to be abandoned, and more than three inches of each had to be removed. The artery being cut off right down to the level of the bifurcation, and with it part of the posterior ligament of the knee, with which the tumor had contracted inseparable adhesions, had to be excised, thus exposing the knee-joint. The peroneal and internal popliteal nerves had to be literally dissected—carved out—from the mass in which they were embedded. The gastrocnemii and soleus muscles also intimately blended with the mass, at their origin, and part of these muscles, with the corresponding sural and articular branches of the popliteal vessels, had to be sacrificed. At this stage

FIG. 2.



Perineural fibroma of the sciatic, involving the femoropopliteal space.

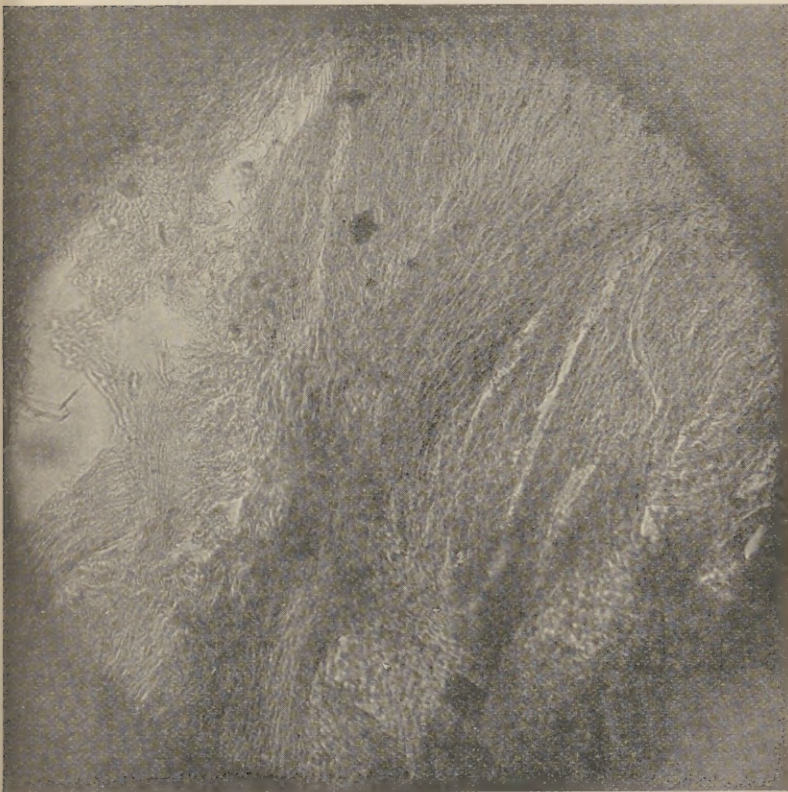
of the operation all hope of saving the foot and leg had been abandoned, believing that sloughing of these parts would be inevitable. Nevertheless, after securing all bleeding-points and removing the constrictor it was observed that the foot and leg gradually lost the waxy cadaveric appearance, and that the color and sensibility of the skin of the foot had returned. All pulsations in the pedal arteries ceased, but the color of the skin encouraged us to hope that a sufficient collateral circulation existed to prevent the total mortification of the leg.

The limb was carefully wrapped up in a copious cotton-wool dressing to keep it aseptic and warm, and the vast wound in the thigh and leg was closed with interrupted sutures and drained. A long posterior, padded, gutter-splint (cardboard), and large aseptic dressing immobilized the limb. The prophylactic hemostasis was very complete and satisfactory. Before operating the limb was drained of blood by elevation, and an Esmarch constrictor was applied high up over the groin and held in place by a Wyeth pin inserted above the great trochanter. In this way the constrictor was held up very high in the hip and prevented from slipping. Notwithstanding complete hemostasis the shock was profound, and the pulse ran up to 160, and was very feeble (the duration of the operation had been over one hour and a half). Three quarts of saline solution were at once injected in the basilic vein, and the pulse fell to 120 and became full and strong.

A careful examination of the tumor was made by Dr. O. L. Pothier, Pathologist of the Charity Hospital, and many sections were cut from different portions of the growth. The bulk of the mass was found to consist "of a dense fibrous tissue of the adult type originating from the neurilemma of the sciatic and its branches." (See Fig. 3.) In many of the sections examined nerve-filaments were

found very much distorted by a hypertrophic sclerogenic

FIG. 3.



Photomicrograph of perineural fibroma of sciatic nerve. (Prepared by Dr. O. L. Polthier, Pathologist, Charity Hospital, New Orleans, La.)

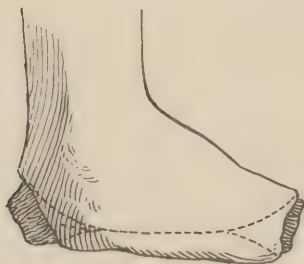
process, and totally surrounded by dense fibrous tissue.

Here and there is the periphery of the growth, round, young, connective-tissue cells could be recognized in a state of transition to the adult forms. The growth of the fibroid tissue had been in many places interstitial, but the tendency of the fibroid process had been to grow excentrically and to invade the perineural connective tissue; this with the fascia and intermuscular septa soon participated in the process, and, in turn, attained huge proportions in consequence of progressive hyperplasia.

The next day the pulse stood at 140 and the temperature 103.5°. The foot, including the toes, could be moved freely by the patient, but all sensibility had left the toes and heel. The toes had also become markedly pale. Ecchymotic spots were noticed over the heel and in a small area over the tarsus. These spots, together with the toes, became subsequently the seat of a leathery, odorless, dehydrating mortification. The general condition of the patient rapidly improved, and three weeks after the operation the sloughed parts were removed with scissors. No attempt was made to shape the stump. The heel and toe surfaces were gradually covered with indolent granulations, but the healing process was very slow. Coincidentally with this indolent effort at repair, signs of trophic and vascular disturbance (*viz.*, diminished sensibility, with redness and sweating in the sole of the foot, accompanied by "burning" pains in the plantar surfaces or "erythromelalgia") became pronounced, and annoying symptoms of neural lesion were unmistakable. Early in March, 1899, an atypical conservative operation was performed with the view of remodeling the stump and providing a suitable covering to the heel and toe regions. An external curvilinear incision was made on the dorsum of the foot, extending from the tendo-Achilles behind to the base of the metatarsals in front. (Fig. 4.) All the plantar structures were reflected in a single massive flap,

including the vessel and nerves, from the skeleton of the foot, the bones of the tarsal being laid bare on the plantar surface. The skeleton of the foot was then reduced to the requisite size and shape by sawing the tuberosity of the calcaneum, part of the cuboid, and the cuneiform with the metatarsals. (The line of osseous section is indicated in Fig. 4.) In this way an ample covering of healthy plantar and dorsal flaps was obtained to cover the stump. In the course of this dissection the plantar nerves were exposed at their origin from the posterior tibial and stretched (as suggested by Chipault for the treatment of

FIG. 4.



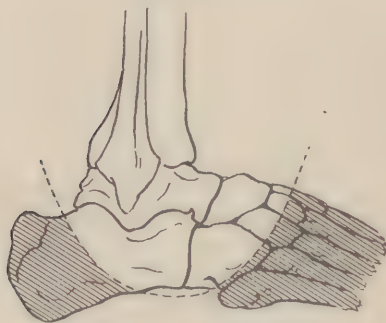
perforating trophic ulcer of the foot), hoping that by this procedure the erythromelalgia of the sole would be relieved. A very excellent, painless, and well-nourished stump resulted from this operation. The line of incision healed with remarkable rapidity and scarcely any suppuration. The vascular and neuralgic symptoms which had proved so annoying before the operation disappeared altogether, and the patient was soon able to leave the ward in excellent condition. He is now better than ever before, having gained remarkably in flesh and strength in consequence of his ability to enjoy outdoor exercise. When

he last called to see me, in April, 1899, he was able to walk on the stump without pain or inconvenience, and had good normal motion at the ankle-joint. It is quite possible that with further exercise he may still have a recurrence of trophic symptoms in the foot, as the amputation is too recent to test the permanency of the recovery, but the result thus far obtained is certainly strikingly favorable and most encouraging. (Fig. 6.)

The points of interest presented by this case are:

1. The existence of a primary perineural fibroma origi-

FIG. 5.



nating in, and involving the entire sheath of the sciatic and its branches.

2. The diffusion of the fibroid process throughout the posterior aspect of the thigh and popliteal connective-tissue planes, without definite encapsulation, forming a hard, dense tumor of vast proportions.

3. The preservation of the entire sciatic nerve-trunk and its large popliteal divisions in spite of the intimate blending of the neoplastic tissue with the neurilemma which was incorporated in the tumor, and was completely surrounded by the mass throughout its course, more especially in the popliteal space.

FIG. 6.



Appearance of the limb and cicatrix, showing the extent of the dissection required for the removal of fibroma of the sciatic. The appearance of the foot stump after healing is also shown,

4. The slow and painless growth of the tumor—ten years.

5. The involvement of the vascular sheaths of the popliteal blood-vessels in the tumor, which made it impossible to dissect the vessels out of the mass.

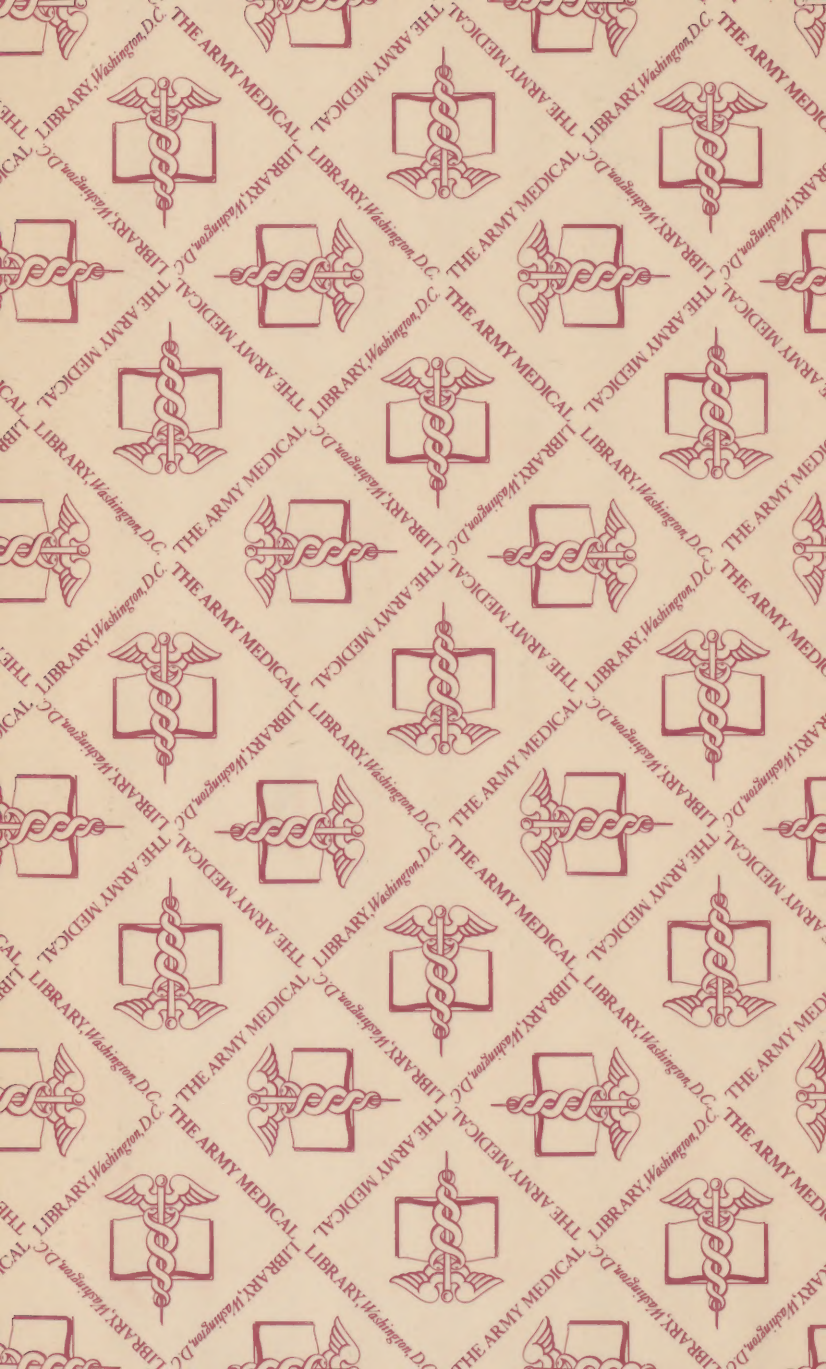
6. The extirpation of the tumor and excision of more than three inches (7.5 cm.) of the popliteal artery and vein.

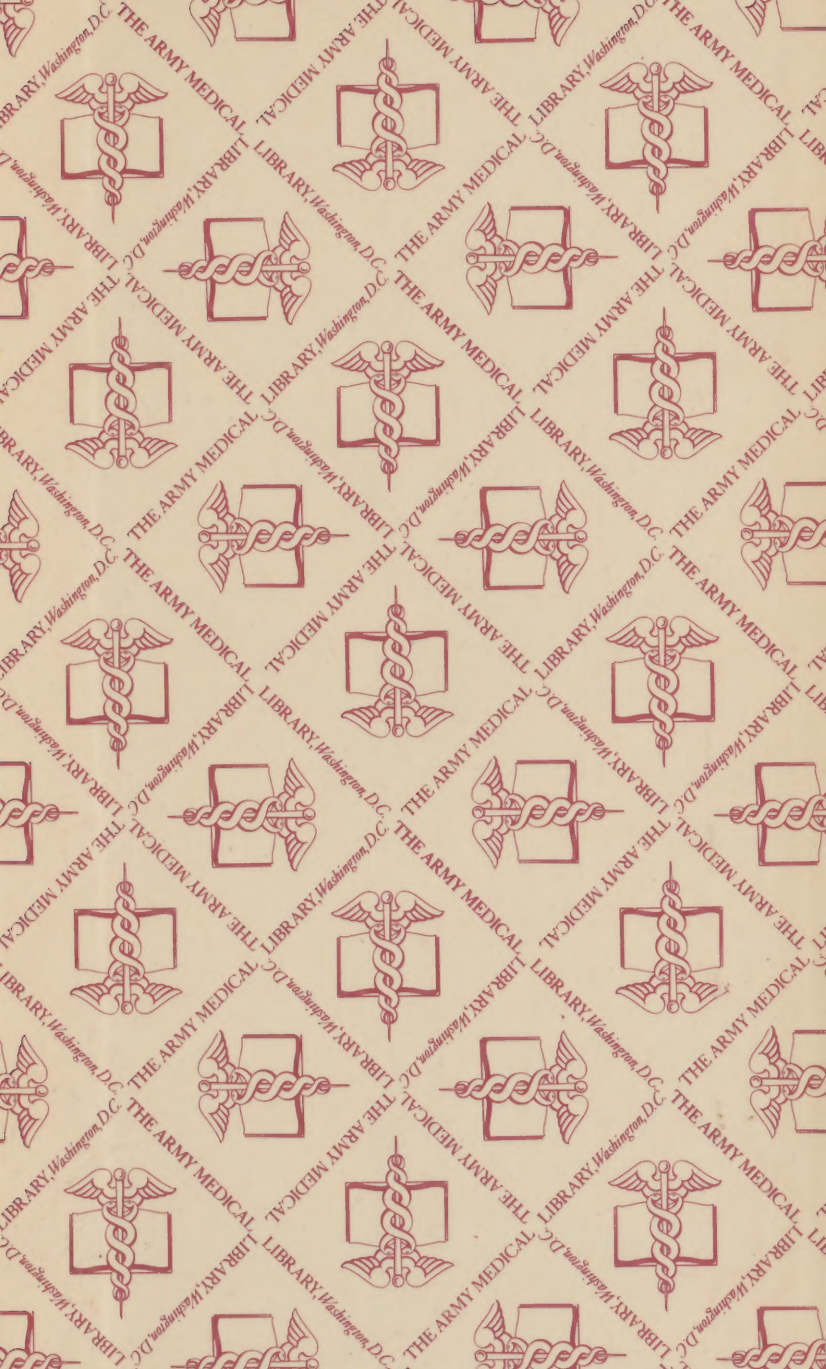
7. The comparatively small area of popliteal sloughing (toes and heel) that followed the total excision of these vessels and many collateral branches.

8. The useful walking stump left to the patient, after a secondary partial and atypical amputation of the tarsus to remodel the stump.

9. The general good result as regards serious trophic lesions from injury to the sciatic nerve, which is an encouragement to conservative efforts in similar cases.

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